ERIC Document Resume	See Instruction Sheet	DATE OF RESUME 8/16/65	DATE RECEIVED

A. PUBLICATION DATA

ERIC NUMBER	2. ORIGINATOR CONTROL NO(S).	3. IDENTIFICATION NO.	DO NOT WRITE IN SPACE BELOW
ED000544	7295		

4. AUTHOR(S): Thistlethwaite, Donald L.

5. TITLE OF DOCUMENT ABSTRACTED: Merit Scholarships and the Higher Education of Gifted Students

6. PUBLICATION TITLE: Journal of Higher Education

7. EDITOR(S): N.A.

8. PLACE OF ORIGIN
ORG. National Merit Scholarship Corp.
ST. 1580 Sherman
CITY, STATE Ave., Evanston, Illinois
TELE. EXT.
INST/LOC CODE

9. PUBLISHER OR SOURCE: Department of Health, Education, and Welfare, Washington, D.C.

10. VOL.	11. PAGES	12. MO./YR.	13. TOTAL PP.
30	295-304	Jun. 59	10

MICROFILM COPY AVAILABLE YES [X] NO [ ]

COPYRIGHT GRANTED YES [ ] NO [X]

COPYRIGHT RELEASE FILED YES [ ] NO [ ]

TYPE OF REPORT
PROPOSAL [ ]
IN-PROGRESS [ ]
FINAL [X]
FOLLOW-UP [ ]

OTHER ERIC REFERENCES:

ERIC SATELLITE CODE

B. INDEXING DATA

14. SUBJECT AREA

15. TYPE OF ENDEAVOR: experimental study

16. INDEXING TERMS (6-12)

	talent	experimental studies		
financial aid	aspirations			
students	graduate education			

17. ABSTRACT (MAX. 250 WORDS)

Comparison was made of college-going behavior of National Merit Scholars and near-winners to determine the effects of scholarship aid on talented youth. Effects of awards were to increase attendance: (*a*) at college of first choice (particularly among students with outstanding high school achievement); (*b*) at colleges with small freshman classes (especially among students of lower aptitude levels); (*c*) at privately controlled colleges (for students of higher rank in high school and lower aptitude level and for students receiving large stipends); and (*d*) at colleges with religious affiliations. High stipends also increased attendance at all-male and at all-female colleges. Students receiving large stipends tend to go to high-cost schools, and the amount of the stipend affects the plans of talented students to seek Ph. D. or M.D. degrees.

ERIC No.

18. SOURCE OF ABSTRACT

C. FUNDING DATA

19. SUPPORTING ORGANIZATION	20. DIVISION OR DEPT.	21. CONTRACT NO. / PROJECT NO.
	22. TOTAL COST OF PROJECT	
	23. DURATION OF PROJECT	U.S. Department of Health, Education, and Welfare Office of Education

ERIC Form 1

IV-21

7295

Merit Scholarships and the Higher Education of Gifted Students

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U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
Office of Education

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ED000544

Reprinted for private circulation from
JOURNAL OF HIGHER EDUCATION
Volume XXX, Number 6, June, 1959

National Merit Scholarship Corp.

Merit Scholarships and the Higher Education of Gifted Students

The Effects of Financial Aid on Talented Youth

By Donald L. Thistlethwaite

THE intellectual development of talented young students is frequently aided or thwarted as a consequence of decisions made during the late high-school or post–high school years—the decision to go to college, the decision to enter a particular college, and the decision to pursue a specific course of study. In the case of the student with limited resources, financial assistance can be expected to affect each of these decisions. Supposedly, the student who gets an unrestricted scholarship is not only thereby encouraged to attend college but also is more likely to attend and graduate from the college of his first choice and to train for the educational or professional career he prefers. The first aim of the study reported here was to investigate the influence of scholarship aid upon the college-going behavior of talented students. The second purpose was to identify some of the characteristics of students which modulate the impact of scholarships.[1] Discovery of the attributes of students who are most responsive to scholarship assistance will help to define conditions for awarding scholarships, and will thus make it possible to maximize the contributions of talented youth to society.

In a related study, it was found that 2 per cent of the National Merit Scholars thought they would not have attended college, and only 3 per cent

[1]This study was partially supported by the National Science Foundation and the Old Dominion Foundation. The writer wishes to express his appreciation to John L. Holland and Laura Kent for their critical reading of the manuscript.

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believed their college educations would have been delayed, if they had not received aid.[2] Yet one out of seven students believed that his Merit Scholarship caused him to raise, or change, his vocational goals; and 35 per cent reported they would probably be attending a different college if they had not received aid. Over one-half of the recipients believed their scholarships enabled or encouraged them to go to what they regarded as more desirable colleges. Evaluations made by students suggest, then, that aid did not appreciably increase the number going to college but did affect choice of college and career and provide motivation to seek more advanced training.

To obtain an estimate of the effects of aid which avoids the ambiguities of retrospection, we must turn to a comparison of experimental treatments. It is necessary to compare scholarship recipients with a control group which does not receive aid. Near-winners in the National Merit competition, who received Certificates of Merit for their high scores on aptitude tests, are most comparable to National Merit Scholars in ability and scholastic achievement and are the most suitable group for this purpose.

The use of Certificate of Merit winners as control subjects unfortunately limited the scope of the study. Only 3 per cent of these students failed to go to college immediately after graduation.[3] This extremely low drop-out rate may be a partial result of the national recognition provided by the Merit program. The social recognition received by near-winners is almost as great as that received by Merit Scholars. Their names appear in a booklet distributed to most colleges and universities, and they are frequently acclaimed by press and community agencies. Holland and Stalnaker have shown that the recognition provides near-winners with considerable emotional support, which may serve as an incentive to them to go to college.[4] It is evident, then, that the comparison of Merit Scholars and near-winners is a stringent test of the influence of scholarships, and cannot adequately gauge the effects of both aid and social recognition. Because of the large proportion of near-winners going to college, the study was restricted to comparisons of students attending college. Only the immediate effects of aid will be discussed here; a subsequent paper will describe the results of follow-up investigations.

A SAMPLE of Merit Scholars entering college in the fall of 1957 was drawn from a pool of 779 responding to a survey mailed at the beginning of the school year (94 per cent replied to the survey). Recipients who had requested the minimum award of $100, a request indicative of no financial need, were excluded. Only near-winners from the same National Merit competition who (a) were attending college and (b) had not

[2] Donald L. Thistlethwaite, "Scholarships and the College-going Behavior of Talented Students," *College and University*, XXXIV (Fall, 1958), pp. 65–73.

[3] Donald L. Thistlethwaite, "The Conservation of Intellectual Talent," *Science*, CXXVIII (October 10, 1958), pp. 822–26.

[4] John L. Holland and John M. Stalnaker, "An Honorary Scholastic Award," JOURNAL OF HIGHER EDUCATION, XXVIII (October, 1957), pp. 361–68.

received any type of scholarship aid were included in the sample from which controls were drawn. Replies to a survey made in December, 1957, were received from 5,126 near-winners, or 82 per cent of the Certificate of Merit winners in 1957. From this group of respondents, 1,938 who had attended college without scholarship assistance were identified.

To maximize their comparability, Merit Scholars and near-winners were matched on the following four variables: (a) sex, (b) total scholastic-aptitude score (SAT), (c) percentile rank in high-school graduating class, and (d) family resources available for sending the student to college. Family resources were estimated from the Parents' Confidential Statement provided by the College Scholarship Service. Previous research indicates that these variables are related to the decision to go to college; presumably, they also affect choice of college and study plans.[5] The use of these variables resulted in 194 matched pairs of Merit Scholars and near-winners. Since each pair was matched on the four variables, it was possible to study interaction effects between each control variable and financial aid.

In reading the following tables, one point should be kept in mind: the students selected for study are not representative of their respective populations. As would be expected, the matched near-winners have significantly greater aptitude scores and higher class ranks than the total group of near-winners. Matched Merit Scholars have significantly lower aptitude scores and—contrary to expectation—higher class ranks than the total group of Merit Scholars. The reader is cautioned not to generalize these results to all Merit Scholars or near-winners in the Merit program. Generalizations are appropriate only for a population with aptitudes, sex distribution, family resources, and class ranks comparable to those described in the tables which follow.[6]

Four-year Merit Scholarships, averaging $809 per year, were awarded to the 194 Merit Scholars matched with near-winners. Annual grants ranged from $100 to $2,000, with a median of $790. Thirteen per cent of the winners received the minimum stipend of $100; 63 per cent received stipends of more than $500; and 37 per cent received grants of $1,000 or more.

SCHOLARS and near-winners were compared with respect to a large number of characteristics (see Table I), but discussion will be limited to those characteristics found to be influenced by aid. In general, Merit Scholarships have immediate effects upon the type of college attended, student residential status, and motivation to seek more ad-

[5]See Ralph F. Berdie, *After High School, What?* (Minneapolis: University of Minnesota Press, 1954); Educational Testing Service, *Background Factors Relating to College Plans and College Enrollment among Public High School Students* (Princeton, New Jersey: Educational Testing Service, 1957); and Byron S. Hollinshead, *Who Should Go to College* (New York: Columbia University Press, 1952).

[6]Since none of the interactions with family resources were statistically significant, breakdowns for this variable are not reported. The average family resources available for paying college costs were $948 and $943 for matched Scholars and near-winners respectively.

vanced training. As the literature in the field suggests, some effects vary according to the student's stipend, sex, aptitude level, or high-school rank. These findings, which represent interaction effects, identify some of the conditions which influence the effects of aid, and are of value because of their potential use in designing scholarship programs to maximize the educational motivation of talented students.

In the National Merit competition participants are required to specify the college they wish to attend before they are notified of the outcome. Changes in college choice are permitted only for winners who are not

TABLE I

EFFECTS OF AID UPON TYPE OF COLLEGE ATTENDED, SATISFACTION WITH COLLEGE AND CAREER CHOICES, STUDY PLANS, AND RESIDENTIAL STATUS

Student Characteristic	Per Cent Having Given Characteristic		Per Cent Difference	P*
	Merit Scholars	Near-Winners		
(1)	(2)	(3)	(4)	(5)
Type of college attended				
Cost of $1,950 or more per year (including $400 travel)	46	41	5	.....
More than 250 miles from student's home	51	42	9	.....
Freshman enrollment less than 1,000 in fall, 1957	65	45	20	<.001
Coeducational	70	73	−3	.....
Private control	81	65	16	<.001
Religious affiliation	34	24	10	<.02
Offers Master's or higher degree	81	86	−5	.....
At least 450,000 volumes in library	44	49	−5	.....
Satisfaction with college and career choices				
Going to college of first choice	93	72	21	<.001
Attendance at college offering best training	54	58	−4	.....
Enrolled in curriculum of choice	84	77	7	.....
Well satisfied with present choice of career	51	48	3	.....
Study plans				
Majoring in engineering, mathematics, or physics	46	45	1	.....
Planning to get Ph.D. or M.D. degree	43	45	−2	.....
Attending college as resident	94	78	16	<.001

*All probability values in this and succeeding tables are based upon two-tailed tests of significance. Standard errors of the differences between percentages and between the second-order differences in later tables take account of the correlations introduced by matching.

admitted to the college designated or who for very good reasons cannot carry out their original intentions. Since the effects of aid are primarily to assist the recipients in realizing their plans, the results for winners and near-winners differ mainly in the fact that the former attend the colleges they originally wanted to attend, whereas the latter do so much less frequently. Near-winners who fail to get scholarships may change their plans because of difficulty in paying college costs or, perhaps, because they are not accepted for admission to the colleges they desire to attend. Merit Scholarships, unlike many other scholarships, are accompanied by a supplementary grant to privately supported institutions equal to tuition (except that the grant, plus tuition, may not exceed $1,500 per

year, per student). Thus each Merit Scholar carries a "price on his head" which could influence privately supported colleges to admit him in preference to other, equally deserving, students. In short, it is possible that Merit Scholarships help the student to attend the college of his choice not only by helping him to pay college costs but also by opening doors for him.[7] This interpretation is supported both by the main effects described in Table I and by the interaction effects summarized in subsequent tables.

Colleges with the most selective admissions policies tend to have smaller enrollments than the large state universities. If Merit Scholarships aid students in gaining admission to small, private colleges of

TABLE II

EFFECTS OF AID UPON TYPE OF COLLEGE ATTENDED FOR STUDENTS OF DIFFERENT APTITUDE LEVELS

Type of College Attended	Aptitude Level*	Per Cent Attending Each Type of College		Effects of Aid	Difference in Effects between Levels	P
		Merit Scholars	Near-Winners			
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Freshman enrollment less than 1,000 in fall, 1957	High (N=95)	57	54	+3	34	<.001
	Low (N=91)	73	36	+37		
Private control	High (N=95)	80	75	+5	22	<.02
	Low (N=91)	81	54	+27		

*The mean SAT (V+M) for high-aptitude Merit Scholars was 1415; for matched near-winners, 1407. Corresponding mean scores for low-aptitude Merit Scholars and near-winners were 1301 and 1296 respectively.

distinguished reputation, then we should expect a greater percentage of our winners to attend such institutions. Table I shows this to be the case. Sixty-five per cent of the Merit Scholars and 45 per cent of the near-winners are attending institutions whose freshman enrollment was less than 1,000. Furthermore, the effects of aid upon attendance at a small college are much greater for low-aptitude students.[8] Table II

[7]Rogoff, in a recent study of College Board institutions, reports that there are nine colleges "where there are at least seven times as many applicants as available places, and which could, theoretically, fill their freshman class at least three times over without going below the median aptitude [of applicants]". Cf. Natalie Rogoff, "Board Member Colleges: A Comparative Analysis" (New York: Bureau of Applied Research, Columbia University, 1957 [mimeo.]).

[8]The term "low aptitude" is relative; it is hardly descriptive of these subgroups in an absolute sense, since both had SAT (V+M) means well above the 95th percentile in relation to estimated national norms for public-high school Seniors, and above the 90th percentile in relation to typical College Board examinees. Cf. Richard S. Levine, *Estimating National Norms for the Scholastic Aptitude Test* (Princeton, New Jersey: Educational Testing Service, 1958).

shows that 73 per cent of the low-aptitude Merit Scholars are going to colleges with small freshman classes, whereas only 36 per cent of the low-aptitude near-winners are attending such colleges. Among high-aptitude students there is only a negligible difference in the proportions of Merit Scholars and near-winners who are going to a small college. This difference in effects at the two aptitude levels may reflect the fact that Merit Scholarships help the low-aptitude student to gain admission to colleges with extremely high admission standards.

Similarly, Merit Scholarships tend to increase the proportion of students attending privately supported colleges (see Table I), and this increase is much greater for low-aptitude than for high-aptitude students

TABLE III

EFFECTS OF AID UPON TYPE OF COLLEGE ATTENDED AND RESIDENTIAL STATUS FOR BOYS AND GIRLS

Student Characteristic	Sex	Per Cent Having Characteristic		Effects of Aid	Difference in Effects between Sexes	P
		Merit Scholars	Near-Winners			
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Attended coeducational college	Boys (N=139)	72	70	+2	21	<.08
	Girls (N=47)	64	83	−19		
Attended college as resident	Boys (N=144)	94	74	+20	14	<.06
	Girls (N=47)	93	87	+6		

(see Table II). This difference in effects at the two aptitude levels is readily explained if we assume that Merit Scholarships influence admissions in the manner already described.

Many privately controlled colleges with high admission standards have a religious affiliation. In line with this knowledge, the finding was made that 34 per cent of the Merit Scholars and 24 per cent of the near-winners are going to colleges which have some type of religious affiliation (see Table I).

Merit Scholarships tend to encourage women to go to women's colleges. Although only 17 per cent of the female near-winners attended such institutions, 36 per cent of the female Merit Scholars attended them (see Table III). Assuming that Merit Scholarships help women to be admitted to the more exclusive women's colleges, this finding is an expected one.

The percentage of Merit Scholars attending high-cost colleges is not significantly greater than the percentage of near-winners going to such colleges (see Table I) because a large number of students receive relatively

small stipends. Table IV shows that among students who received stipends of $800 or more, however, a larger proportion of winners than of near-winners go to high-cost colleges. Large stipends also tend to decrease attendance at coeducational colleges, a finding which is consistent with the fact that the large majority of our low-cost state universities are coeducational.

To interpret student responses to the question "Are you now going to the college you *really wanted to attend* when you graduated from high school?" the relation of college choice to high-school rank must be

TABLE IV

AMOUNT OF STIPEND AND ITS EFFECT UPON TYPE OF COLLEGE ATTENDED AND EDUCATIONAL PLANS

STUDENT CHARACTERISTIC	AMOUNT OF STIPEND*	PER CENT HAVING CHARACTERISTIC		EFFECTS OF AID	DIFFERENCE IN EFFECTS BETWEEN STIPEND LEVELS	P
		Merit Scholars	Near-Winners			
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Attending high-cost college	Small	32	41	−9	26	<.01
	Large	59	42	+17		
Attending coeducational college	Small	81	67	+14	34	<.001
	Large	59	79	−20		
Attending private college	Small	67	60	+7	19	<.03
	Large	95	69	+26		
Planning to get Ph.D. or M.D. degree	Small	43	55	−12	22	<.03
	Large	45	35	+10		

*Small stipends ranged in value from $100 to $750. Large stipends ranged in value from $800 to $2,000. N's for small stipend pairs ranged from 92 to 93; those for large stipend pairs ranged from 93 to 99.

considered. Table I indicates that 93 per cent of the winners and 72 per cent of the near-winners say they are going to the college of first choice. Aid increases attendance at the college of first choice primarily among students who ranked relatively high in their high-school classes: 96 per cent of the winners in the high ranks, but only 66 per cent of the near-winners in the high ranks, say they are going to the college of first choice (see Table V). Among students in the lower ranks, the difference is only 13 per cent. Top-ranking students may be highly motivated academically and may aspire to attend colleges with distinguished reputations; those failing to win scholarships must modify their plans either because they cannot pay the costs or because they are not admitted. Students in the lower high-school ranks, it may be assumed, have lower aspirations; hence winning or not winning a scholarship is less influential. A similar interpretation may be made of the fact that Merit Scholarships

increase attendance at privately controlled colleges among high-ranking students to a greater extent than among low-ranking students (see Table V).

Since the aims of a liberal education may be more easily realized when the student leaves the protective atmosphere of the home, it is encouraging to note that Merit Scholarships increase the proportion of students attending college as residents (see Table I). This effect is most pronounced among boys (see Table III). The sex difference suggests that parents tend to believe that girls going to college should live on the campus, whereas boys may attend as commuters.

TABLE V

EFFECTS OF AID UPON TYPE OF COLLEGE ATTENDED FOR STUDENTS OF DIFFERENT SCHOLASTIC ACHIEVEMENT

TYPE OF COLLEGE ATTENDED	RANK IN HIGH-SCHOOL CLASS	PER CENT ATTENDING EACH TYPE OF COLLEGE		EFFECTS OF AID	DIFFERENCE IN EFFECTS ON SUBJECTS AT DIFFERENT LEVELS	P
		Merit Scholars	Near-Winners			
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Attended privately controlled college.....	High* (N=95)	86	61	+25	20	<.03
	Low* (N=91)	73	68	+5		
Going to college of first choice.....	High (N=95)	96	66	+30	17	<.05
	Low (N=94)	89	76	+13		

*The mean high-school percentile rank for high-achieving Merit Scholars was 99.4; for matched near-winners, 99.1. Corresponding mean ranks for low-achieving Merit Scholars and near-winners were 96.2 and 96.8 respectively.

The amount of the scholarship stipend affects the plans of talented students to seek Ph.D. or M.D. degrees. Among students who received stipends of $750 or less, 43 per cent of the Merit Scholars plan to get one of these degrees, whereas 55 per cent of the matched near-winners plan to get a Ph.D. or M.D. degree (see Table IV). These students, it will be recalled, were matched on family resources, and the fact that this subgroup of winners received small stipends indicates that they are relatively well-to-do. It is possible that students from comparatively high socioeconomic levels react to failure to win a scholarship by aspiring to higher educational goals. On the other hand, students who receive stipends of $800 or more, and the matched near-winners, are drawn primarily from lower socioeconomic levels. Students from low socioeconomic levels tend to have lower aspiration levels, a postulate suggested by the fact that only 35 per cent of the matched near-winners plan to seek the Ph.D. or M.D. degree. Forty-five per cent of the Merit Scholars of low economic

status plan to get one of these degrees. This result suggests that Merit Scholarships tend to increase the educational motivation of students of lower socioeconomic levels, but, for students of higher socioeconomic levels, failure to win a scholarship competition may be more stimulating than the award of a scholarship itself. A similar interaction effect was found when the matched pairs were classified into high and low groups on the basis of family resources, although in this comparison the second-order difference was not statistically significant.

IN ESTIMATING the generality of these results we must keep in mind the possibility of sampling biases and the degree of disparity between the experimental treatments. Selection procedures in the Merit program are designed to identify the most promising students. It is to be expected, therefore, that Merit Scholars and near-winners will differ in attributes related to college-going behavior. To control these initial differences it was necessary to exclude from the analysis many exceptional winners because comparable near-winners could not be found. The procedure of matching equates students with respect to the four matching variables, but the possibility remains that one or more relevant variables have been overlooked. Assuming that selections are made on criteria which correlate positively with the college-going behaviors studied, failure to match the two groups adequately would result in a bias which would increase the likelihood of Scholars excelling near-winners. Thus it might appear that the present study—if it errs—errs in the direction of overestimating the effects of finanical aid. On the other hand, there are three features which suggest that these results may underestimate the effects of scholarships. First, many of the Merit Scholars received small stipends. More than a third of the awards did not exceed $500 in value. Such awards cannot be expected to have the same impact as larger awards—an expectation confirmed by the finding (see Table IV) that large stipends have greater effects than small stipends upon the type of college attended and greater positive effects upon motivation to seek advanced training. Second, the usual scholarship award, which provides both financial assistance and social recognition, could not be adequately treated here, since the near-winners who served as controls received considerable recognition. Third, it was not possible to study the effectiveness of scholarships in motivating students to go to college. As mentioned earlier, the fact that 97 per cent of the near-winners are bound for college—which may be a result of national recognition—precluded any study of effects upon decisions to attend college.

Further research employing ex post facto designs with different matching variables and with different student samples would help to clarify these results. The use of new matching variables would also provide additional information about interaction effects, which are of great practical importance because of their usefulness in identifying students whose college-going behavior will be most influenced by aid.

THE techniques and findings of the study reported in this article may be summarized as follows. A comparison was made of the college-going behavior of National Merit Scholars and near-winners in the second annual National Merit Scholarship Program. One hundred and ninety-four pairs of winners and non-winners of scholarships were matched on sex, aptitude scores, percentile rank in high-school class, and family resources available for sending the student to college. The immediate effects of the awards were to increase college attendance (a) at the college of first choice, particularly among students with outstanding high-school achievement; (b) at colleges with small freshman classes, especially among students of lower aptitude levels; (c) at privately controlled colleges, for students of higher rank in high school and lower aptitude level, and for students receiving large stipends; and (d) at colleges with religious affiliations. Students receiving large stipends are influenced to attend high-cost schools and to seek advanced training. High stipends also increase attendance at all-male or all-female colleges. Scholarships tend to increase the number of women attending women's colleges and the number of men attending college as residents. The findings suggest that Merit Scholarships affect the college enrollment of gifted students by improving the student's chances of gaining admission to institutions with extremely selective admission policies.